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10/736,815	12/16/2003	Ralph Gholmieh	4740-235	5396

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EXAMINER	
SAFAIPOUR, BOBBAK	

ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 12/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/736,815	GHOLMIEH ET AL.	
	Examiner	Art Unit	
	Bobbak Safaipour	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/17/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged.

Information Disclosure Statement

2. The information disclosure statement submitted on May 17, 2004 has been considered by the Examiner and made of record in the application file.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1-13, 15, and 17-18** are rejected under 35 U.S.C. 102(b) as being anticipated by **Saints et al (United States Patent #6,075,974).**

Consider **claim 1**, Saints et al show and disclose a method of tracking mobile station power headroom at a wireless communication network base station comprising:

receiving a power headroom report from a mobile station (col. 2, lines 30-41; col. 3, lines 34-41; A method for controlling transmission signal power of transmitted communication signals for the base station includes the steps of: transmitting a current communication signal and receiving the current communication signal. Saints et al further disclose that mobile stations typically send quality or error messages over the reverse link channel to the base station);

storing a headroom value for the mobile station based on the power headroom report received from the mobile station (col. 2, lines 30-41; col. 3, lines 8-13; Determining a quality

level of the current communication signal and comparing the adjusted quality level threshold to the quality level of the current communication signal. Saints et al further disclose the messages indicate the quality or power level of each frame or portions of the frame received in the forward link channel.); and

updating the headroom value to track changes in a transmit power of the mobile station based on reverse link power control information associated with the mobile station (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased.).

Consider **claim 2**, and **as applied to claim 1 above**, Saints et al show and disclose the claimed invention wherein receiving a power headroom report from a mobile station comprises receiving periodic power headroom reports from the mobile station (col. 2, lines 30-41; col. 3, lines 34-41; A method for controlling transmission signal power of transmitted communication signals for the base station includes the steps of: transmitting a current communication signal and receiving the current communication signal. Saints et al further disclose that mobile stations typically send quality or error messages over the reverse link channel to the base station).

Consider **claim 3**, and **as applied to claim 2 above**, Saints et al show and disclose the claimed invention wherein storing a headroom value for the mobile station based on the power headroom report received from the mobile station comprises setting the stored headroom value to

a received headroom value in each periodic power headroom report (figures 2b and 4;col. 2, lines 30-41; col. 3, lines 8-13; col. 9, lines 28-30; Determining a quality level of the current communication signal and comparing the adjusted quality level threshold to the quality level of the current communication signal. Saints et al further disclose the messages indicate the quality or power level of each frame or portions of the frame received in the forward link channel. This routine is stored in memory that forms part of the power control processor of the mobile station).

Consider **claim 4**, and **as applied to claim 1 above**, Saints et al show and disclose the claimed invention wherein updating the headroom value to track changes in a transmit power of the mobile station based on reverse link power control information associated with the mobile station comprises incrementing and decrementing the headroom value based on reverse link power control commands being transmitted to the mobile station (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased.).

Consider **claim 5**, and **as applied to claim 4 above**, Saints et al show and disclose the claimed invention wherein transmitting reverse link power control commands to the mobile station at a defined rate, and wherein incrementing and decrementing the headroom value based on reverse link power control commands being transmitted to the mobile station (col. 9, line 60 to col. 10 line 9; Fewer power control methods can be sent by mobile station during each frame.

For example, rather than employing the relatively fast report rate on the reverse link of 8 or 16 bits per frame, only one bit per frame could be employed.) comprises: decrementing the headroom value responsive to transmitting an up power command to the mobile station; and incrementing the headroom value responsive to transmitting a down power command (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased.).

Consider **claim 6**, and **as applied to claim 1 above**, Saints et al show and disclose the claimed invention wherein updating the headroom value to track changes in a transmit power of the mobile station based on reverse link power control information associated with the mobile station comprises receiving power adjustment feedback from the mobile station indicative of its ongoing reverse link transmit power adjustments, and updating the headroom value based on the power adjustment feedback (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased.).

Consider **claim 7**, and **as applied to claim 6 above**, Saints et al show and disclose the claimed invention wherein receiving power adjustment feedback from the mobile station comprises receiving power control decisions from the mobile station that indicate whether the mobile station increased or decreased its transmit power in a given power control interval (col. 2, lines 30-41; Mobile stations typically send quality or error messages over the reverse link channel to the base station. If the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased.)

Consider **claim 8**, and **as applied to claim 1 above**, Saints et al show and disclose the claimed invention wherein determining whether to grant an increased reverse link data rate to the mobile station based on the headroom value (col. 2, lines 30-41; Mobile stations typically send quality or error messages over the reverse link channel to the base station. If the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased.).

Consider **claim 9**, and **as applied to claim 1 above**, Saints et al show and disclose the claimed invention wherein determining whether to select the mobile station for a reverse link rate adjustment based on the headroom value (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile

station provides a message to the base station to request that the forward channel be appropriately increased or decreased.).

Consider **claim 10**, and **as applied to claim 1 above**, Saints et al show and disclose the claimed invention wherein the mobile station comprises one in a plurality of mobile stations being supported by the base station, and further comprising receiving power headroom reports from the plurality of mobile stations, storing headroom values for the plurality of mobile stations, and updating the headroom value for each mobile station based on reverse link power control information associated with each mobile station (col. 3, lines 4-16; col. 4, lines 4-7; A method for controlling transmission signal power of transmitted communication signals for the base station includes the steps of: (a) transmitting a current communication signal; (b) receiving the current communication signal; (c) determining a quality level of the current communication signal; (d) adjusting a quality level threshold based on at least one prior power control message; (e) comparing the adjusted quality level threshold to the quality level of the current communication signal; (f) transmitting a current power control message based on the comparison; and (g) transmitting a new communication signal at an adjusted power level based on the current power control message. The system utilizes communication between users of mobile stations (e.g., mobile telephones) and base stations.).

Consider **claim 11**, Saints et al show and disclose a method of tracking mobile station power headroom at a wireless communication network base station comprising:

periodically receiving a full report from a mobile station that indicates a transmit power headroom of the mobile station (col. 2, lines 30-41; col. 3, lines 34-41; A method for controlling transmission signal power of transmitted communication signals for the base station includes the

steps of: transmitting a current communication signal and receiving the current communication signal. Saints et al further disclose that mobile stations typically send quality or error messages over the reverse link channel to the base station);

updating a headroom value maintained at the base station for the mobile station responsive to receiving each full report (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message.); and

tracking changes in transmit power headroom between each full report using reverse link power control information associated with the mobile station (col. 2, lines 30-41; col. 3, lines 10-16; If the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased.).

Consider **claim 12,** and **as applied to claim 11 above**, Saints et al show and disclose periodically receiving a full report from a mobile station that indicates a transmit power headroom of the mobile station comprises periodically receiving one or more bits in a Packet Data Unit (PDU) header (col. 9, line 60 to col. 10 line 9; Fewer power control methods can be sent by mobile station during each frame. For example, rather than employing the relatively fast report rate on the reverse link of 8 or 16 bits per frame, only one bit per frame could be employed.).

Consider **claim 13**, and **as applied to claim 12 above,** Saints et al show and disclose the claimed invention wherein periodically receiving a full report from a mobile station that

indicates a transmit power headroom of the mobile station comprises receiving a full report from the mobile station every N reverse link transmit frames, where N is an integer number greater than zero (col. 2, lines 30-41; col. 3, lines 34-41; col. 9, line 60 to col. 10 line 9; A method for controlling transmission signal power of transmitted communication signals for the base station includes the steps of: transmitting a current communication signal and receiving the current communication signal. Saints et al further disclose that mobile stations typically send quality or error messages over the reverse link channel to the base station. Fewer power control methods can be sent by mobile station during each frame. For example, rather than employing the relatively fast report rate on the reverse link of 8 or 16 bits per frame, only one bit per frame could be employed.).

Consider **claim 15**, and **as applied to claim 11 above**, Saints et al show and disclose the claimed invention wherein tracking changes in transmit power headroom between each full report using reverse link power control information associated with the mobile station comprises receiving one or more bits at each reverse link power control decision point indicating whether the mobile station incrementally increased or decreased its reverse link transmit power at that decision point (col. 2, lines 30-41; col. 3, lines 10-16; col. 9, line 60 to col. 10 line 9; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased. Fewer power control methods can be sent by mobile

station during each frame. For example, rather than employing the relatively fast report rate on the reverse link of 8 or 16 bits per frame, only one bit per frame could be employed.).

Consider **claim 17**, and **as applied to claim 11 above**, Saints et al show and disclose the claimed invention wherein determining whether to select the mobile station for a reverse link rate increase based on whether the headroom value maintained at the base station for the mobile station indicates that the mobile station has sufficient transmit power headroom to support a contemplated higher rate (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased.).

Consider **claim 18**, and **as applied to claim 11 above**, Saints et al show and disclose the claimed invention wherein tracking changes in transmit power headroom between each full report using reverse link power control information associated with the mobile station comprising incrementally adjusting the headroom value for the mobile station based on reverse link power control commands being transmitted to the mobile station (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power

on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased.).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. **Claims 14, 16, 19-32** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Saints et al (United States Patent #6,075,974)** in view of **Miyoshi et al (European Patent Application EP 1 204 225 A1).**

Consider **claim 14**, and **as applied to claim 11 above**, Saints et al disclose the claimed invention wherein tracking changes in transmit power headroom between each full report using reverse link power control information associated with the mobile station (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased.). Saints et al fail to disclose receiving one or more differential reports from the mobile station during intervals between the full reports.

However, Miyoshi et al show and disclose, as known in the art, an allocation section 101 in a base station apparatus of the present invention sets the transmission rate of a transmit signal for a communication terminal apparatus based on a DRC (data rate control) signal transmitted from that communication terminal apparatus. A power margin information detector 117 detects power margin information from a demodulated signal generated by a demodulator 115, and, using that power margin information, a power setting section 118 makes a setting so as to give

the minimum transmission power value at which received characteristics in each communication terminal apparatus meet the desired quality (fig. 2, abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Miyoshi et al into the system of Saints et al to suppress interference to a communication terminal apparatus.

Consider **claim 16,** and **as applied to claim 15 above**, Saints et al show and disclose the claimed invention except for incrementally adjusting the headroom value up or down according to the differential reports being received from the mobile station.

However, Miyoshi et al show and disclose, as known in the art when total throughput after a reduction in the transmission power value cannot be maintained at the total throughput prior to the reduction in the transmission power value, the transmission power value is gradually made to approach the normal value (the transmission power value is gradually raised), but the transmission power value may also be restored directly to its normal value (paragraph 144).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Miyoshi et al into the system of Saints et al to achieve efficient transmit data transmission.

Consider **claim 19**, and **as applied to claim 11 above**, Saints et al show and disclose tracking changes in transmit power headroom between each full report using reverse link power control information associated with the mobile station (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message.

Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased.). Saints et al fail to disclose receiving one or more differential reports from the mobile station between the full reports, wherein the differential reports indicate incremental adjustments in transmit power being made by the mobile station responsive to reverse link power control commands received by the mobile station (paragraph 144).

However, Miyoshi et al show and disclose, as known in the art when total throughput after a reduction in the transmission power value cannot be maintained at the total throughput prior to the reduction in the transmission power value, the transmission power value is gradually made to approach the normal value (the transmission power value is gradually raised), but the transmission power value may also be restored directly to its normal value.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Miyoshi et al into the system of Saints et al to achieve efficient transmit data transmission.

Consider **claim 20**, and **as applied to claim 19 above**, Saints et al show and disclose the claimed invention wherein mobile station comprises one in a plurality of mobile stations, and further comprising maintaining headroom values for the plurality of mobile stations responsive to receiving full reports from each mobile station (col. 2, lines 30-41; col. 3, lines 34-41; col. 4, lines 4-7; The system utilizes communication between users of mobile stations (e.g., mobile telephones) and base stations. A method for controlling transmission signal power of transmitted communication signals for the base station includes the steps of: transmitting a current

communication signal and receiving the current communication signal. Saints et al further disclose that mobile stations typically send quality or error messages over the reverse link channel to the base station). Saints et al fail to disclose mobile station comprises one in a plurality of mobile stations, and further comprising maintaining headroom values for the plurality of mobile stations responsive to receiving differential reports from each mobile station.

However, Miyoshi et al show and disclose, as known in the art, an allocation section 101 in a base station apparatus of the present invention sets the transmission rate of a transmit signal for a communication terminal apparatus based on a DRC (data rate control) signal transmitted from that communication terminal apparatus. A power margin information detector 117 detects power margin information from a demodulated signal generated by a demodulator 115, and, using that power margin information, a power setting section 118 makes a setting so as to give the minimum transmission power value at which received characteristics in each communication terminal apparatus meet the desired quality (fig. 2, abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Miyoshi et al into the system of Saints et al to suppress interference to a communication terminal apparatus.

Consider **claim 21**, and **as applied to claim 20 above**, Saints et al, as modified by Miyoshi et al, further disclose using the headroom values maintained for the plurality of mobile stations to determine whether particular ones of the mobile stations are candidates for reverse link rate increases (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power

level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased.).

Consider **claim 22**, Saints et al show and disclose wherein one or more processing circuits including a headroom tracking circuit configured to track transmit power headroom for a mobile station by:

periodically receiving a full report from a mobile station that indicates a transmit power headroom of the mobile station (col. 2, lines 30-41; col. 3, lines 34-41; A method for controlling transmission signal power of transmitted communication signals for the base station includes the steps of: transmitting a current communication signal and receiving the current communication signal. Saints et al further disclose that mobile stations typically send quality or error messages over the reverse link channel to the base station);

updating a headroom value maintained at the base station for the mobile station responsive to receiving each full report (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message.); and

tracking changes in transmit power headroom between each full report using reverse link power control information associated with the mobile station (col. 2, lines 30-41; col. 3, lines 10-16; If the mobile station detects a change in quality or power on the forward channel, the mobile

station provides a message to the base station to request that the forward channel be appropriately increased or decreased.).

Saints et al fail to disclose a base station for use in a wireless communication network comprising: transceiver circuits to communicate with a plurality of mobile stations via wireless signaling; and one or more processing circuits to control communications with the plurality of mobile stations.

However, Miyoshi et al show and disclose, as known in the art, a transmitting RF section 110 that converts the frequency of the transmit signal amplified by the power controller 109 to a radio frequency, and outputs this signal to a duplexer 111. The duplexer 111 transmits the transmit signal converted to a radio frequency by the transmitting RF section 110 to a communication terminal apparatus via an antenna 112. The duplexer 111 also outputs a signal transmitted by a communication terminal apparatus and received via the antenna 112 (received signal) to a receiving RF section 113. The receiving RF section 113 converts the frequency of a received signal from the duplexer 111 to baseband, and outputs the received signal converted to baseband to a despreader 114 (paragraphs 26-27).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Miyoshi et al into the system of Saints et al to achieve efficient transmit data transmission.

Consider **claim 23,** and **as applied to claim 22 above**, Saints et al, as modified by Miyoshi et al, show and disclose the claimed invention wherein the headroom tracking circuit is configured to periodically receive one or more bits in a Packet Data Unit (PDU) header as the full report (col. 9, line 60 to col. 10 line 9; Fewer power control methods can be sent by mobile

station during each frame. For example, rather than employing the relatively fast report rate on the reverse link of 8 or 16 bits per frame, only one bit per frame could be employed.).

Consider **claim 24,** and **as applied to claim 23 above**, Saints et al, as modified by Miyoshi et al, show and disclose the claimed invention wherein the headroom tracking circuit is configured to receive a full report from the mobile station every N reverse link transmit frames, where N is an integer number greater than zero (col. 2, lines 30-41; col. 3, lines 34-41; col. 9, line 60 to col. 10 line 9; A method for controlling transmission signal power of transmitted communication signals for the base station includes the steps of: transmitting a current communication signal and receiving the current communication signal. Saints et al further disclose that mobile stations typically send quality or error messages over the reverse link channel to the base station. Fewer power control methods can be sent by mobile station during each frame. For example, rather than employing the relatively fast report rate on the reverse link of 8 or 16 bits per frame, only one bit per frame could be employed.).

Consider **claim 25**, and **as applied to claim 22 above**, Saints et al show and disclose the claimed invention wherein the headroom tracking circuit is configured to track changes in transmit power headroom between each full report using reverse link power control information associated with the mobile station (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be

appropriately increased or decreased.). Saints et al fail to disclose receiving one or more differential reports from the mobile station during intervals between the full reports.

However, Miyoshi et al show and disclose, as known in the art, an allocation section 101 in a base station apparatus of the present invention sets the transmission rate of a transmit signal for a communication terminal apparatus based on a DRC (data rate control) signal transmitted from that communication terminal apparatus. A power margin information detector 117 detects power margin information from a demodulated signal generated by a demodulator 115, and, using that power margin information, a power setting section 118 makes a setting so as to give the minimum transmission power value at which received characteristics in each communication terminal apparatus meet the desired quality (fig. 2, abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Miyoshi et al into the system of Saints et al to suppress interference to a communication terminal apparatus.

Consider **claim 26**, and **as applied to claim 22 above**, Saints et al, as modified by Miyoshi et al, show and disclose the claimed invention wherein the headroom tracking circuit is configured to track changes in transmit power headroom between each full report using reverse link power control information associated with the mobile station by receiving one or more bits at each reverse link power control decision point indicating whether the mobile station incrementally increased or decreased its reverse link transmit power at that decision point (col. 2, lines 30-41; col. 3, lines 10-16; col. 9, line 60 to col. 10 line 9; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted

power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased. Fewer power control methods can be sent by mobile station during each frame. For example, rather than employing the relatively fast report rate on the reverse link of 8 or 16 bits per frame, only one bit per frame could be employed.).

Consider **claim 27**, and **as applied to claim 26 above**, Saints et al show and disclose the claimed invention except for receiving one or more differential reports from the mobile station during intervals between the full reports.

However, Miyoshi et al show and disclose, as known in the art when total throughput after a reduction in the transmission power value cannot be maintained at the total throughput prior to the reduction in the transmission power value, the transmission power value is gradually made to approach the normal value (the transmission power value is gradually raised), but the transmission power value may also be restored directly to its normal value (paragraph 144).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Miyoshi et al into the system of Saints et al to achieve efficient transmit data transmission.

Consider **claim 28**, as **applied to claim 22 above**, Saints et al, as modified by Miyoshi et al, show and disclose the claimed invention wherein the base station is configured to determine whether to select the mobile station for a reverse link rate increase based on whether the headroom value maintained for the mobile station indicates that the mobile station has sufficient transmit power headroom to support a contemplated higher rate (col. 2, lines 30-41; col. 3, lines

10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased.).

Consider **claim 29**, and **as applied to claim 22 above**, Saints et al, as modified by Miyoshi et al, show and disclose the claimed invention wherein the headroom tracking circuit tracks changes in transmit power headroom between each full report using reverse link power control information associated with the mobile station by incrementally adjusting the headroom value for the mobile station based on reverse link power control commands transmitted to the mobile station (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased.).

Consider **claim 30**, and **as applied to claim 22 above**, Saints et al show and disclose the claimed invention wherein the headroom tracking circuit tracks changes in transmit power headroom between each full report using reverse link power control information associated with the mobile station (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold

based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased.). Saints et al fail to disclose receiving one or more differential reports from the mobile station between the full reports, wherein the differential reports indicate incremental adjustments in transmit power being made by the mobile station responsive to reverse link power control commands received by the mobile station.

However, Miyoshi et al show and disclose, as known in the art when total throughput after a reduction in the transmission power value cannot be maintained at the total throughput prior to the reduction in the transmission power value, the transmission power value is gradually made to approach the normal value (the transmission power value is gradually raised), but the transmission power value may also be restored directly to its normal value (paragraph 144).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Miyoshi et al into the system of Saints et al to achieve efficient transmit data transmission.

Consider **claim 31**, and **as applied to claim 30 above**, Saints et al show and disclose the claimed invention wherein the headroom tracking circuit is configured to maintain headroom values for the plurality of mobile stations responsive to receiving full reports from each mobile station (col. 2, lines 30-41; col. 3, lines 34-41; col. 4, lines 4-7; The system utilizes communication between users of mobile stations (e.g., mobile telephones) and base stations. A

method for controlling transmission signal power of transmitted communication signals for the base station includes the steps of: transmitting a current communication signal and receiving the current communication signal. Saints et al further disclose that mobile stations typically send quality or error messages over the reverse link channel to the base station). Saints et al fail to disclose the claimed invention wherein the headroom tracking circuit is configured to maintain headroom values for the plurality of mobile stations responsive to receiving differential reports from each mobile station.

However, Miyoshi et al show and disclose, as known in the art, an allocation section 101 in a base station apparatus of the present invention sets the transmission rate of a transmit signal for a communication terminal apparatus based on a DRC (data rate control) signal transmitted from that communication terminal apparatus. A power margin information detector 117 detects power margin information from a demodulated signal generated by a demodulator 115, and, using that power margin information, a power setting section 118 makes a setting so as to give the minimum transmission power value at which received characteristics in each communication terminal apparatus meet the desired quality (fig. 2, abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Miyoshi et al into the system of Saints et al to suppress interference to a communication terminal apparatus.

Consider **claim 32**, and **as applied to claim 31 above**, Saints et al, as modified by Miyoshi et al, further disclose using the headroom values maintained for the plurality of mobile stations to determine whether particular ones of the mobile stations are candidates for reverse link rate increases (col. 2, lines 30-41; col. 3, lines 10-16; Adjusting a quality level threshold

based on at least one prior power control message, transmitting a current power control message based on the comparison and transmitting a new communication signal at an adjusted power level based on the current power control message. Saints et al further disclose if the mobile station detects a change in quality or power on the forward channel, the mobile station provides a message to the base station to request that the forward channel be appropriately increased or decreased.).

Conclusion

7. Gopalakrishnan et al (European Patent Application EP 1 187 370 A1) disclose **Integrating power-controlled and rate-controlled transmissions on a same frequency carrier.**

Blanc (European Patent Application EP 1 077 534 A1) disclose **A method for reporting transmit power usage in a variable bit rate mobile radio communication system.**

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